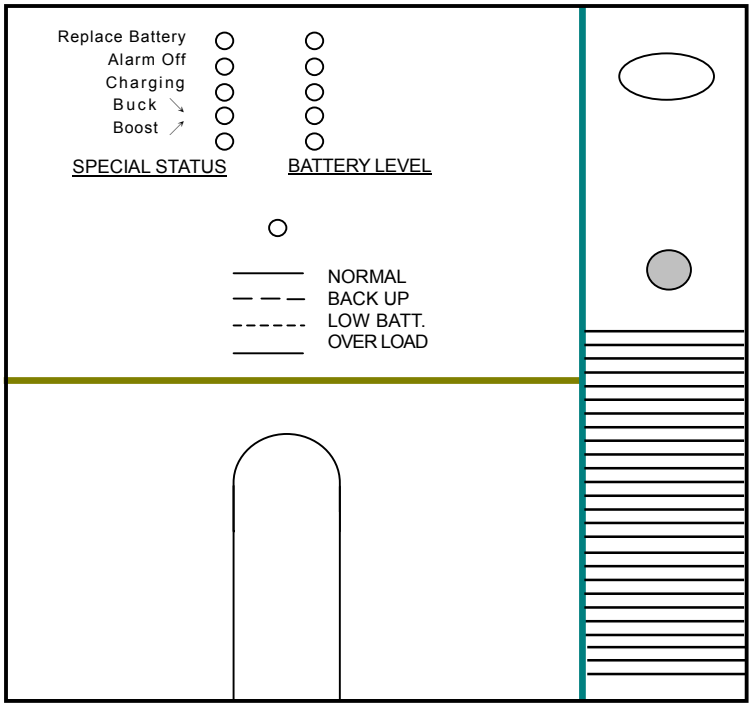
UPS + AVR

Uninterruptible Power System

User's Manual

Back-up Series

(BS-600/1200/1700/2000)



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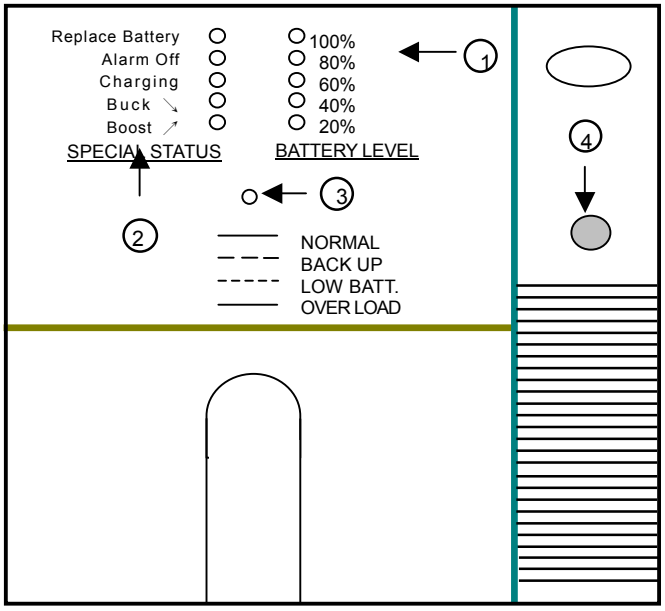
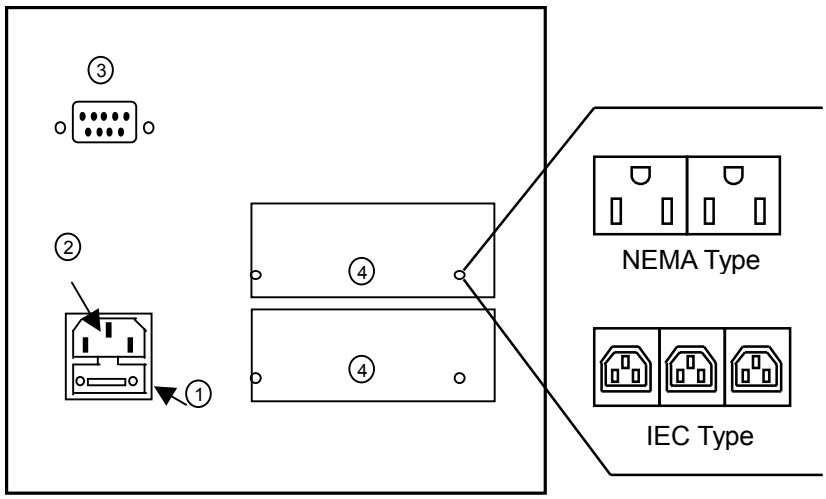
Front Panel



① LEDs of battery voltage level.
② LEDs of UPS special status.
③ LED of operation status.
④ Control button.

Rear Panel



① Fuse.
② Inlet of city power.
③ RS-232 port (DB-9).
④ Outlets (NEMA/IEC).

1. INTRODUCTION

1.1 Overview:

The Back-up series UPS is an advanced high performance stand by Uninterruptible Power System (UPS) designed to protect your computer from utility line failure. In the event of utility failure (blackout), the UPS will rapidly transfer loads to an alternative power source, which derives power from battery set inside the UPS.

The UPS provides two charging mode, quick charging and trickle charging, to maintain the batteries in the best condition. Battery status indication, including battery level, low battery, charging, and bad battery, are shown on the front panel.

1.2 Battery Replacement warning

The self-test function (real-time detection) will inform you with an alarm when the batteries are weak and require replacement.

1.3 Smart-AVR

The UPS automatically corrects output voltage within the normal range, both in low utility voltage (boost LED lights up) and high utility voltage (buck LED lights up) conditions.

2. MAIN FEATURE:

※ Microprocessor based design.

※ Advanced indication for special operation status.

※ Green mode function.

※ Auto detect input frequency 50Hz/60Hz.

※ Self test function.

※ Battery replacement indication.

※ Extra wide-range AVR function.

※ Standard RS-232 port for monitoring function.

※ Double protections for over load & short circuit.

3. CAUTION :

※ The UPS is designed to power computer loads and the associated peripheral devices, such as monitors, modems, external H-Disk drivers, etc. To ensure the performance of the UPS, Do Not load the UPS with laser printer, motor, or any type of inductive load.

※ Connecting the UPS to a two-pole, three-wire grounding mains receptacle. Connection with any other type of receptacle may result in a shock hazard and may violate local electrical codes.

※ Do not allow water or any foreign object to get inside the UPS. And do not put objects containing liquid on or near the unit.

※ Keep UPS away from fire or heating sources.

※ The UPS is shipped from the factory with fully charged internal batteries; however, the batteries may lose some energy during delivery and storage. To ensure that the UPS will provide the expected run-time during a blackout, the UPS must be left in charging for at least 5 hours before your first use. The batteries will be recharged automatically by UPS when the UPS is connected with city power.

4. INSTALLATION & OPERATION :

4.1 Installation

※ Inspecting the packing carton for damage that may have occurred while in transit. Immediately notify the carrier and place of purchase if any damage is found. Retain the package for future use.

※ Plugging the power cord to a 3-wire grounding receptacle. If an extension cord must be used between the UPS and the nearest wall outlet, use a 3-wire grounding type rated for at least 20 Amps.

※ Connecting your equipment to the UPS. To ensure that your computer equipment will be protected during a utility failure, it is important to make sure that the maximum power need of the equipment is not over the rated capacity of the UPS. When blackout happens, LED of operation status will become red and alarm will beep if the load is over the rated value. Meantime, if the overload is severe, the UPS will shut down immediately for protecting UPS itself.

4.2 Operation

4.2.1 When the power cord is connected with normal city power, UPS will turn on automatically and go through the procedure of self-test (about 3-4 sec.). If test results are O.K., the green LED will be on.

4.2.2 Pushing the button for 3 seconds, the UPS will turn off the power. But, the red LED will blink when the AC power cord is connected. To turn off the power completely, please pull out the power cord. To push the control button will turn on the UPS again.

4.2.3 During blackout, push the button for 3 seconds until the buzzer emit beeping, the UPS will turn on and enter into back up mode. To turn off the UPS, please push the button for 3 seconds.

5. INDICATION AND CONTROL

5.1 Battery level LEDs

The battery level LEDs show the voltage level both in back-up mode and in normal mode. When the LED indicates 20% of the capacity in back-up mode, it means that the UPS is going to shut down; for the length of backup time left, it will depend on the load. While when all five LEDs light in normal mode, it means that the battery is fully charged.

5.2 Special status LEDs

The **Replace Battery** LED would be on when the UPS battery is no longer useful and must be replaced.

When the **Alarm Off** LEDs comes on, the UPS will not emit beep during back-up mode or when battery needs to be replaced. However, the low battery alarm and over load alarm will still sound for urging user to leave computer without any data loss.

The **Charging** LED would be on when the charger is charging the battery. While the battery voltage is low in normal mode, the charger will keep on quick charging, when the battery voltage is high, the charger is keeping on for 4 seconds by every 24 seconds for trickle charging.

The **Boost** LED would be on when the UPS is connecting a low utility voltage. The loads receive normal power.

The **Buck** LED would be on when the UPS is connecting a high utility voltage. The loads receive normal power.

5.3 Auto self-test function:

In normal mode of UPS, turn on your computer and push the button on the front panel for self-test. The UPS will simulate a power outage and transfer your load to the UPS battery. If low battery warning sounds during the test, it means that the battery set is weak and requires extended recharge. If replace battery warning sound, it means that the battery set is damaged and requires replacement.

5.4 Status LED and Alarm Indication:

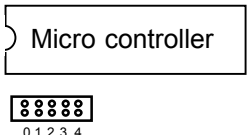
- ※ GRN LED, no alarm ---------- City power normal.
- ※ ORG LED flashing, two beeps / 8 sec. ---------- Backup mode.
- ※ ORG LED flashing, one beep / 4 sec. ---------- No load. (Auto shut down after 24 sec.)
- ※ ORG LED flashing, quick beeping, 4 beeps / sec -------- Low battery.
- ※ Red LED flashing, continuous beeping ---------- Over load.
- ※ “Replace battery” LED, urgent beeping, 8 beeps / sec ---- Battery Replacement.

5.5 Reset the UPS

If any abnormal condition occurs, and the item 4.2.1 ~ 4.2.3 can not be executed, please push the button for at least 6 sec. until the buzzer emit continues beeping, then the UPS is reset.

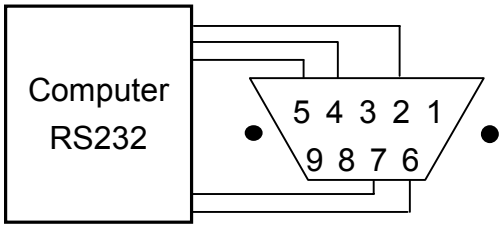
Under back-up mode, the UPS will be turned off by reset. While under AC mode, the UPS will go through the procedure of self-test by reset.

5.6 The setting of SW1



SW1 – 0 open	SW1 – 1 open	220V input rating
SW1 – 0 short	SW1 – 1 open	200V input rating
SW1 – 0 open	SW1 – 1 short	230V input rating
SW1 – 0 short	SW1 – 1 short	240V input rating
SW1 – 2	Open Short	DC start 50Hz DC start 60Hz
SW1 – 3	Open Short	Enable green mode Disable green mode

6. COMMUNICATION INTERFACE:



Pin2 : AC Power Failure

Pin4 : Common GND of Pin2 & Pin5

Pin5 : UPS Battery Low

Pin6 : Turn off UPS

Pin7 : GND of Pin6

The interface with computer is diagramed as above for your reference. Use Pin4 as the common of Pin2 and Pin5, Pin2 and Pin4 will become close loop from open when the utility fails, Pin5 and Pin4 will become close loop from open when the battery level is low.

The UPS will shut down itself when the high level signal from RS-232, sustained for 3 seconds, is applied between Pin6 and Pin7.

7. TROUBLE SHOOTING

Problem	Possible Cause	Action to Take
UPS no reaction while AC is connected	1. Line cord plug is loose 2. Fuse on rear panel blown (Inside the drawer of inlet) 3. Dead wall socket	1. Check the line cord plug 2. Replace fuse 3. Check wall socket with a table lamp.
Power output is normal, UPS emits continuous beep, status LED shows RED.	UPS is over loaded	Turn off UPS and unplug excessive loads from UPS.
UPS does not provide expected run time	1. Excessive loads connected at UPS outlets. 2. Battery is weak and cannot provide enough capacity.	Do not operate the UPS, and leave the UPS plugged in for 10 hours. Then, test it again, if UPS still cannot provide expected run time, battery should be replaced.
Button on front panel doesn't work	1. The CPU inside UPS is not running correctly. 2. Button damaged.	1. Push the button for 6 seconds to reset the UPS. 2.Unplug line cord and all loads from the UPS, and call for service.
Under AC mode, UPS emits urgent beep (8 beeps per sec.) and LED of "Replace Battery" comes on.	Battery is weak and should be replaced	Replace batteries.
No output when blackout happen.	1. Dead battery. 2. UPS NG.	1. Replace battery. 2. Call for service.

8. SPECIFICATIONS:

CAPACITY	BS-600	BS-1200	BS-1700	BS-2200
	600VA/360W	1200VA/700W	1700VA/1050W	2200VA/1400W
INPUT Voltage Frequency	Selectable 100/110/115/120V 1ø or 200/220/230/240V 1ø 50Hz/60Hz Auto detect			
Current (110V/220V)	6A / 3A	12A / 6A	16A / 8A	21A / 10A
OUTPUT Voltage	100/110/115/120V 1ø or 200/220/230/240V 1ø ±6% for Back-up Mode < ±10% for AVR			
Frequency	50Hz or 60Hz ± 0.1Hz (Selectable under DC start)			
Wave Form	Simulated Pseudo Sine Wave			
Current (110V/220V)	5.5A / 2.8A	11A / 5.5A	15.5A / 7.8A	20A / 10A
TRANSFER TIME	4 ms typical.			
BATTERY	Lead-Acid, maintenance free			
Voltage/Capacity	12V 7Ah X 1pcs	12V 7Ah X 2pcs	12V 7Ah X 3pcs	12V 7Ah X 4pcs
Level Ind.	YES	YES	YES	YES
Recharge Time	90% within 8 hrs		90% within 5 hrs	
LED/ALARM INDICATION				
Normal/In charge	GRN LED, No Beep.			
Back up / Abnormal Input Voltage	ORG LED Flashing, 2 Beeps / 8 sec.			
Abnormal Input Frequency (Back up)	ORG LED Rapid Flashing, No Beep.			
Green mode auto off	ORG LED flashing, 1 Beep / 4 sec. (Auto off after 24 sec.)			
Low Battery	ORG LED Flashing, 4 Beeps / sec.			
Battery Replacement	RED LED Flashing, 8 Beeps/ sec.			
Over Load/Fault	RED LED Flashing, Continuous Beep.			
INDICATION OF SPECIAL STATUS	**Replace Battery / Alarm Off / Charging / Buck / Boost**			
DC START / ALARM RESET	YES	YES	YES	YES
BATTERY LOAD INDICATION	YES	YES	YES	YES
ENVIRONMENT TEMP.	0 - 37 ℃			
ENVIRONMENT HUMIDITY	30-95% Non-Condensing			
DIMENSIONS (L x H x W) (cm)	38 x 20 x 18	38 x 20 x 18	44 x 20 x 18	51 x 20 x 18
SHIPPING DIM. (L x H x W) (cm)	48 x 33 x 30	48 x 33 x 30	54 x 33 x 30	61 x 33 x 30
WEIGHT (N.W. / G.W.) (kgs)	9/10	15/16	21.50/22.50	25/26

9. IMPORTANT SAFETY INSTRUCTIONS

- When replacing the batteries, use the same number and the same type of batteries.
- Do not dispose of batteries in a fire; the battery may explode.
- Do not open or mutilate the battery or batteries, released electrolyte is harmful to the skin and eyes.
- A battery can present a risk of electric shock and high short circuit current. The following precaution should be observed when working on batteries.
  * Remove watches, rings or other metal objects.
  * Use tools with insulated handles.
- To prevent an overbalance of this unit, with the installation the additional stabilizer are to mount at the bottom side.
- This unit is to be installed from service personnel.
- The equipment can be operated by any individual with no previous experience.
- “The socket-outlet shall be installed near the equipment and easily accessible.”
- “With the installation of this equipment it should be prevented, that the sum of the leakage current of the UPS an the connected consumer does not exceed 3.5mA.”
- Attention, hazardous through electric shock. Also with disconnection of this unit from the main, hazardous voltage still may be accessible through supply from battery.
- The battery supply should be therefore disconnected in the plus and minus pole through the from the outer enclosure accessible battery fuses when maintenance or service work inside the UPS is considered.
- The lead acid battery may cause chemical hazard.
- The battery presents a risk of electric shock and energy hazard.
- Batteries are to be disposed by the manufacturer or importer. Customers need to send them back with no charge for disposal.
- Electrical hazard, the discharge time is about 5 min.

German wording:

- Wenn Sie die Batterien austauschen, verwenden Sie bitte die gleiche Anzahl und den gleichen Batterietyp.
- Werfen Sie niemals die Batterien in das Feuer, die Batterien könnten explodieren.
- Öffnen oder beschädigen Sie nicht die Batterien, ausfileßendes Elektrolyt ist schädlich für Haut und Augen.
- Eine Batterie kann eine Gefahz eines elektrischer Schlages und sehr groβer Kurzschluβströme beinhalten. Folgenda Vorkehrungen soiiten getroffen warden, wenn Sie mit der Battery arbeiten.
  * Entfernen Sie Uhren, Ring and andere metallische Objekte.
  * Verwenden Sie Werkzeug mit isolierten Griffen.
- Um ein Umkippen dieses Gerätes zu verhindern, sind mit der Installation dieses Gerätes die zugätalichen Stützen an der Unterseite dieses Gerätes anzubringen.
- Dieses Gerät ist durch Elektrofachkräfte zu installieren.
- Bedienung durch jedermann ohne dem Vorkenntnisse.
- “Die Steckdose muβ nahe dem Gerät angebracht und leicht zugänglich sein.”
- “Bei der Installation dieses Gerätes ist darauf zu achten, daβ die Summe der Ableitstöme der USV und der angeschlossenen Verbraucher den Maximalwert von 3.5mA nicht Überschreiten.”
- “Vorsicht, Gefahr durch elektrischen Schlag. Auch nach Trennung von der Netzeingangsspannung werde Teile innerhalb der USV von der Batterie gespeist und führen gefährliche Spannung.
- Bei Instandhaltungsarbeiten ist daher die Versorgung durch die Batterie an den von auβen zugänglichen Sicherungshaltern in beiden Polen zu unterbrechen.”
- Die Blei-Akkumulatoren Können bei unsachgemäβer Handhabung chemische Gefahren hervorrufen.
- Die Batterie birgt eine Gefahr eines elektrischen Schlages und sehr hoher Kurzschluβstroeme.
- Batterien werden durch den Hersteller oder Importeur entsorgt. Dazu muessen die Batterien kostenfrei angeliefert werden.
- Gegahr durch elektrischen Schlag, die Entladeit dieser Kondensatoren beträgt 5 min.